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ABSTRACT

The project summarized here focuses on the interpretability of vocational education outcome data. The booklet first covers the project problem and background, project objectives, general plan of operation, and the analysis of extant data bases in vocational education. It then discusses a case study of differences in job placement rates reported by states, including the case study questions, sample design, conclusions, differences in high and low placement states, suggested research hypotheses, and suggested guidelines for using placement data as reported by states. Finally, the booklet presents the titles of three papers commissioned for the project, the topics considered at a project-sponsored national conference on vocational education outcome measures, a description of a handbook on vocational education measures, and nine project conclusions. (EM)

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EXECUTIVE SUMMARY

INTERPRETING OUTCOME MEASURES IN VOCATIONAL EDUCATION

A Project Funded by the
National Institute of Education

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U.S. DEPARTMENT OF HEALTH,
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FOREWORD

Interpreting outcomes of vocational education is a major concern of teachers, administrators, members of advisory councils, and policy members for vocational education at all levels. The concern focuses on interpreting outcomes of vocational education in response to the requirements and intent of the Education Amendments of 1976 and to the need for viable vocational education programs and services to prepare individuals for employment.

The National Institute of Education recognized the confusion surrounding the interpretation of current vocational education outcome data and contracted with the National Center to examine the interpretability of the data and examine other outcome measures. This summary of the final report of the project "Interpreting Outcome Measures in Vocational Education" provides a brief description of the project findings.

Recognition for their efforts are due to many persons including the project staff of Floyd L. McKinney, project director; Kenney E. Gray, research specialist; Marie Abram, graduate research associate; and Roseann Pavlick, secretary; the evaluation division staff including N. L. McCaslin, associate director and former acting project director; Jerry Walker, former associate director; Stephen Franchak, research specialist; and other staff of the National Center for Research in Vocational Education. Significant contributions to the conduct of the project were also made by Robert Stump, project officer, The National Institute of Education; the national advisory committee for the project; Grant Venn, Mary Kievit, and Donald Drewes who prepared commissioned papers; Robert Billings who wrote a chapter of the handbook, Vocational Education Measures: Instruments to Survey Former Students and Their Employers; and Robert Morgan, George Copa, and John Jennings who joined the previously mentioned individuals in giving presentations at the national conference conducted by the project staff. The National Center is especially indebted to the many local and state vocational educators who participated in the case study portion of the project.

Robert E. Taylor
Executive Director
The National Center for
Research in Vocational
Education

INTERPRETING OUTCOME MEASURES IN VOCATIONAL EDUCATION

PROBLEM AND BACKGROUND

The overarching problem for the project was the interpretability of vocational education outcome data.

The problem of interpreting data on the impact of vocational education has been persistent and multifaceted. Congressional staff members, the National Advisory Council for Vocational Education and numerous other agencies have expressed concern about the interpretability of vocational education outcome data.

The reasons for difficulties in interpreting vocational education outcome data are numerous. Various reports have indicated there are problems of definitions, problems of communication, and problems of handling data. Also, there is a lack of documentation concerning the processes used to collect job placement data.

Many studies have expressed concern about the virtual impossibility of clearly interpreting data on the outcomes of vocational education. At the core of this problem is the lack of commonly accepted standard definitions of: (1) the vocational student; (2) relatedness of training to employment; (3) job performance (employers' views of former vocational students); and (4) job satisfaction (former students' views of their occupational and other life roles).

For "vocational student" and "relatedness," the major definitional--and subsequent, interpretability--issues stem from seemingly inconsistent and incomplete use of the terms as operationally applied by state and local education agencies. The problems with "job performance" and "job satisfaction" stem not so much from inconsistent usage as from a dearth of measurement tools and processes by which one could even begin to grasp their operational meaning.

The project objectives and strategies evolved from the preceding problems. The project objectives were developed and the strategies were designed to determine the

effects of the inconsistent and incomplete uses of "vocational student" and "relatedness" on interpretability and to begin to understand the complexities of measuring "job performance" and "job satisfaction."

OBJECTIVES

The project objectives were as follows:

1. To verify inconsistent usage of the terms "vocational student" and "relatedness" among local vocational education agencies and state vocational education agencies.

2. To determine how different definitions of "vocational student" and "relatedness" might effect the interpretability of vocational education impact data (e.g., reported percentages of vocational students finding related employment after training) by using existing data bases.

3. To synthesize the current literature and approaches measuring "job satisfaction" and job performance."

4. To prepare a handbook on vocational education measures.

5. To prepare position papers on the socio-political issues underlying the interpretability issue.

6. To share and discuss the results of objectives 1, 2, 3, 4, and 5 by means of a national conference.

7. To maintain contact with agencies with whom the project can contribute and benefit.

GENERAL PLAN OF OPERATION

The following strategies and activities were used to accomplish the project objectives.

- Use of a project advisory committee.
- Liaison with other agencies and groups.
- Case study of factors contributing to differences in placement rates.

- Commissioned papers.
- A National Conference on Outcome Measures for Vocational Education.
- Development of a handbook on vocational education measures.

The results of these strategies and activities are briefly described on the following pages. More detailed information appears in the Final Report.

ANALYSIS OF EXTANT DATA BASES IN VOCATIONAL EDUCATION

In keeping with the intent of the Request for Proposal by the National Institute of Education and with the project objectives an attempt was made to locate a data base which would allow the investigators to vary the definitions of "vocational student" and "relatedness" to demonstrate what might happen to placement rates.

To conduct such an analysis would have required that the following student information be available in the data base.

1. Data on the vocational program in which a student is enrolled coded by USOE program codes.
2. Data on current occupation coded by the number of the DOT job title.
3. Teacher or student judgment of relatedness of training to employment (e.g., related, somewhat related, unrelated).
4. A computerization of the information included in Matching Occupational Classifications to Vocational Education Program Codes.

In most data bases students were classified as either vocational, general or college preparatory. Generally students were not coded by USOE program codes and if they were, they usually included only the first two digits. No information was included relative to the length of time students spend in vocational classes. Current occupations were generally not included but were reported as related, somewhat related, or not related.

Most of the data bases identified were connected with studies conducted for other purposes. As such, it was not feasible to expect that the data could be manipulated using yet another design.

Most data bases have relied on teacher reported data from each classroom. Although teachers would be expected to report information honestly, certain variations would normally be anticipated due to the varying interpretations made from the original questions.

It was not possible to identify an existing data base for secondary analysis. Therefore, a case study was conducted in selected state and local education agencies to identify reasons for the wide discrepancies in placement rates reported by states.

CASE STUDY OF DIFFERENCES IN JOB PLACEMENT RATES REPORTED BY STATES

Case Study Questions

The overall purpose of the case study was to identify and describe the factors associated with the differences in job placement rates in field trained and related fields as reported by states. The specific questions addressed were:

1. What (e.g., delivery system for vocational education, organizational structure for vocational education, level and sources of financial support for vocational education, attitudes toward evaluation, etc.) can be identified as contributing to the differences in job placement rates in field trained and related fields?

2. How do the definitions of the terms vocational education and dropout, completer, leaver and relatedness contribute to the differences in job placement rates in field trained and related fields?

3. What processes of collecting placement data can be identified as contributing to the differences in job placement rates in field trained and related fields?

4. How does the operation of a placement service contribute to the differences in job placement rates in field trained and related fields?

5. How does the utilization of placement data contribute to the differences in job placement rates in field trained and related fields?

The study was designed to concentrate in those areas for which vocational educators may have more control and/or influence.

Sample Design

By using Project Baseline data for 1975, two pools of states were determined: two states were selected with high job placement rates and two states were selected with low job placement rates. In addition, one state was selected near the median of all states. The selection of states also took into consideration such factors as: (a) region or geographic location, (b) urban/rural character of the state, (c) state population ranking, and (d) size of state vocational education staff. Two local education agencies were selected in each state on the basis of: (1) placement data collection efforts, (2) size of agency, (3) size of vocational education program, and (4) proximity to the state vocational education agency. Personnel were interviewed in the five state vocational education agencies, two local vocational education agencies in each of the five states and representatives in the U.S. Office of Education.

In the conclusions of the study, states with high placement rates are identified as States A and B. The state with placement rates in the median range is identified as State C. States D and E had low placement rates.

Conclusions

Personnel at all levels within all five states viewed the collection of placement data as primarily a compliance effort. In States A and E, the effort was viewed as compliance with both federal and state regulations. In three states, State B, C, and D, the compliance was viewed as reaction to the federal mandate. Interviewees at the federal level also believed that the state data were being collected primarily as a compliance effort.

It was assumed that collecting data primarily in response to a mandate would weaken the incentive of personnel involved in the effort. This appeared to be the case in all of the states. Interviewees at the state vocational education agency believed the placement data could be used for general decision

making and program improvement. It appeared that greater effort could be made to use the placement data in all of the states.

With no consistent use of the placement data and with compliance serving as the major impetus for its collection, placement data were not collected systematically with an emphasis on precision and accuracy. State E reports monitoring its data collection process. All of the other states did mimimum monitoring or evaluating of their data collection processes. In these states only a brief review of the data was made as it was submitted to the state vocational education agency. Federal interviewees expressed concern over the lack of auditable records at the local vocational education level.

Interviewees in all states and at the federal level expressed concern for the reliability and validity of the placement data. This concern with the quality of the data took the form of questioning its accuracy due to:

1. the room for accidental slippage
2. the room for purposeful slippage
3. the lack of systematic procedures
4. lack of information on students not able to be located
5. collection of the data during the former student's final year on the job when job changes are frequent.

Closely tied to the quality of the data was the wide variety of sophistication of personnel and data processing equipment among the states. State B reported using hand calculators to process their data. The other states used data processing equipment but had varying degrees of cooperation with the department in which the data processing equipment was housed. The federal interviewers confirmed this wide range of sophistication and believed it to be a major variable accounting for differences in the accuracy of placement data among states.

In only one state, State E, had specific financial resources been allocated to the follow-up procedure. The other states added the responsibility of the follow-up study to personnel assigned other major responsibilities.

Lack of finances to hire additional personnel and provide

inservice workshops to increase the expertise of present personnel appeared to limit the ability of the states to provide better quality data. Federal interviewees confirmed this lack of adequate funding as a source of poor quality data.

The state vocational education agency generally functioned in an advisory capacity in the collection of placement data. State E was the exception in that it had considerable state level coordination. None of the states had a written policy for the follow-up process.

The placement data were disseminated differently in the various states. State D collected data beyond that required by the U.S. Office of Education. These data were reported in a major document that contrasted sub-groups of students over the past several years. This report was widely disseminated throughout the state and local vocational education agencies. States B and C did not prepare any report beyond completing the U.S. Office of Education form. Distribution of the U.S. Office of Education form in these states was very selective.

States A and E prepared a summary report which they disseminated widely throughout the state and local vocational education agencies. States D and E also made area and local data available. State E used workshops as another form of dissemination.

Differences in High and Low Placement States

The previous discussion concerned the general situation found in all five of the states. Individual states that did not fit within the general picture were specifically mentioned. The following four conclusions were based on the findings of the study where low placement states differed from high placement states:

1. Low placement states had a higher proportion of the secondary school students enrolled in vocational education. The low placement states reported approximately forty percent of the secondary population enrolled in vocational education whereas approximately one-third of the secondary population of the high placement states was enrolled in vocational education.

2. The process of collecting placement data was more systematic in the low placement states when

compared to the high placement states.

3. Low placement states collected placement data by way of a mail survey directly to the former student whereas high placement states used teacher collected data.

4. Low placement states had a narrower definition of "completers" than high placement states. High placement states included students who left the program before completion but found work in a related field as completers, whereas, low placement states did not.

5. Both of the low placement states and the middle placement state provided placement data feedback to the area and local education agencies.

The information provided in Table 1 reports trends in consistency among the states. The reader should be aware of these trends and not accept them as absolutes or statements of cause and effect.

Suggested Research Hypotheses

The following research hypotheses were generated by the project staff in relationship to the study questions. These hypotheses were generated as a result of the case study findings in the five states and should form the basis for planning additional study. These hypotheses represent ideas about what the next research steps might be concerning vocational education placement data.

1. A state's reported placement rates will decrease as the state implements a more systematic placement data collection process.

2. A state's reported placement rate will decrease as the individuals responsible for collecting and reporting the data view the effort more as information to be used for program improvement, rather than compliance.

3. As a consistent set of definitions for the key terms regarding placement data is developed there will be a decrease in the state's reported placement rate.

Table 1

Consistency of Collecting, Reporting and Using
Placement Data in the Case Study States*

Issue Areas	TRENDS TOWARD CONSISTENCY				
	Between High Placement States	Between Low Placement States	of Middle Placement State with High States	of Middle Placement State with Low States	Between High and Low Placement States
DEFINITIONS OF KEY TERMS					
Comparison of Official Definitions with Those in Actual Use					
Student	Yes	Yes	Yes	Yes	Yes
Completer	Yes	Yes	No	No	Yes
Leaver	No	No	No	No	No
Dropout	No	No	No	No	No
Occupational Titles	No	No	No	No	No
Relatedness	No	No	No	No	No
Influences Contributing to the Formation of Definitions	Yes	Yes	Yes	Yes	Yes
Strategies Used to Communicate Definitions of Key Terms	Yes	Yes	Yes	Yes	Yes
Monitoring and Evaluating the Use of Definitions	Yes	Yes	Yes	Yes	Yes
PROCESS OF COLLECTING PLACEMENT DATA					
General Processes Used in Planning and Conducting Placement Studies	Yes	No	No	No	No
State Policies Concerning Placement Studies	No	No	No	No	No

Table 1, Continued

Issue Areas	TRENDS TOWARD CONSISTENCY				
	Between High Placement States	Between Low Placement States	of Middle Placement State with High States	of Middle Placement State with Low States	Between High and Low Placement States
State Guidelines for Planning and Conducting Placement Studies	Yes	No	N	No	No
Assistance Available for Planning and Conducting Placement Studies	Yes	No	Yes	No	No
Roles and Responsibilities for Conducting Placement Studies	Yes	No	Yes	No	No
Resource Allocations for Placement Studies	Yes	No	Yes	No	No
External Influences Affecting Placement Studies	Yes	No	Yes	No	No
Monitoring and Evaluating Study Efforts	Yes	No	Yes	No	No
Problems	Yes	Yes	Yes	Yes	Yes
Planned Changes	No	No	No	No	No
UTILIZATION OF PLACEMENT DATA					
Compliance of Program Improvement	Yes	Yes	Yes	Yes	Yes
Dissemination Efforts of the Various States	No	Yes	No	No	No
Uses Made of Placement Data	Yes	Yes	Yes	Yes	Yes
Problems	Yes	Yes	Yes	Yes	Yes

Table 1, Continued

Issue Areas	TRENDS TOWARD CONSISTENCY				
	Between High Placement States	Between Low Placement States	of Middle Placement State with High States	of Middle Placement State with Low States	Between High and Low Placement States
PLACEMENT FUNCTION					
Agency Philosophical Position Concerning the Placement Function	Yes	Yes	Yes	Yes	Yes
State Coordination for the Placement Function	Yes	No	Yes	No	No
Placement Services Provided	Yes	Yes	Yes	Yes	Yes
Resource Allocation for Placement Services	Yes	No	Yes	No	No
Nature and Extent of Cooperation with Other Agencies	No	No	No	No	Yes
Problems	Yes	No	Yes	No	No

* The information provided in Table 1 reports trends in consistency among the states. The reader should be aware of these trends and not accept them as absolutes or statements of cause and effect.

4. A state's reported placement rate will decrease as the state develops more specific policies, guidelines, and instructions.

5. A state's reported placement rate will decrease as the state implements placement data collection strategies that use the former student as the primary source of information.

6. A state's reported placement rate will increase as the state implements a comprehensive and systematic placement system for current and former vocational education students.

7. A state's reported placement rate will decrease as the attitude toward collecting placement data reflects one of collecting data for program improvement rather than collecting data to be in compliance with federal, state, and local regulations.

8. A state's reported placement rate will increase as the percentage of vocational education students enrolled in cooperative programs increases.

9. A state's reported placement rate will increase as the local vocational teachers' commitment for placing students increases.

Suggested Guidelines for Using Placement Data as Reported by States

Based on the findings of the case study the following guidelines are suggested for use by those individuals and groups using vocational education placement data reported by states. These guidelines are general and should not be construed to be specific to a given state. They should be used as a set of cautions to observe when using placement data as it is currently being reported.

1. Users of placement data should be very cautious when using placement data to make comparisons within and among states because of the numerous ways in which key terms are defined.

2. Users of placement data should be aware of the original source of the data, since there tends to be some difference in the way critical items are interpreted by former students in contrast to teachers or administrators.

3. Users of placement data should not automatically fault a vocational education program solely on the basis of placement rates.

4. Users of placement data should be aware of the placement services offered by the agencies from which they are using placement data since agencies with more highly developed placement services tend to have higher placement rates.

5. Users of placement data should determine whether or not the reported data include responses from graduates of vocational education programs and from non-graduates of vocational education programs.

6. Users of placement data should be aware that in most instances the data have not been verified.

7. Users of placement data should recognize that the job reported for a former student is but a step in the individual's total career path.

COMMISSIONED PAPERS

Three major papers were commissioned. The papers addressed issues underlying the concerns of the project. The papers and the authors were:

1. Perspectivism in Choosing and Interpreting Outcome Measures in Vocational Education - Mary Kievit

2. Outcome Standardization for Compliance or Direction: The Critical Distinction - Donald Drewes

3. Criteria Against Which Vocational Education Should Be Held Accountable - Grant Venn

It is possible that the commissioned papers will be available on a cost-recovery basis from the National Center for Research in Vocational Education.

NATIONAL CONFERENCE

One hundred-twenty vocational educators and other interested individuals attended the National Conference on

Outcome Measures for Vocational Education, August 16-18, 1973 at the Galt House in Louisville, Kentucky. The conference focused on the commissioned papers mentioned above. In addition, the following major topics were considered.

1. A National Problem: Interpreting Outcome Measures in Vocational Education - Robert Morgan

2. Evaluating Vocational Education: A Congressional Perspective - John Jennings

3. Concepts and Complexities of Measuring Job Satisfaction and Job Performance - Robert Billings

4. Instruments for Measuring Job Satisfaction and Job Performance - Kenney Gray

5. Analysis of Extant Data Bases in Vocational Education - N. L. McCaslin

6. Case Study of Differences in Job Placement Rates Reported in States - Floyd McKinney

The conference participants, through small group sessions, provided reactions to the presentations.

VOCATIONAL EDUCATION MEASURES: INSTRUMENTS TO SURVEY FORMER STUDENTS AND THEIR EMPLOYERS

A handbook of instruments on (1) job satisfaction, (2) job performance, (3) former student's perception of vocational training, and (4) employer's perception of student's vocational training was prepared. The handbook provides the practitioner with abstracts of instruments, copies of instruments, and a suggested method of choosing an instrument that fits the practitioner's purpose. Considerable attention is given to the concepts and complexities of measuring the four categories of instruments included in the handbook.

For each instrument review in the handbook, the following information is included in the abstract: (1) title of instrument, (2) developer of instrument, (3) data, (4) availability, (5) description of instrument, (6) administration, (7) test data, and (8) general comments.

It is possible that the handbook will be available on a cost-recovery basis from the National Center for Research in Vocational Education.

CONCLUSIONS

The following conclusions are based on the total scope of project activities.

- Vocational education program outcomes need to be closely linked to the values of individuals and groups concerned with and interested in vocational education.

- The originators of data concerning the outcomes of vocational education, the local education agencies, must be the primary users of the data in order for ultimate improvements in vocational education to result.

- If the data are useful to the provider of data, e.g., local administrators and teachers, then efforts will be put forth as necessary to collect accurate data.

- At the time of this study, extant data bases did not include sufficient information to permit an investigation of the effects of differing definitions on placement rates.

- In general, placement data are not collected systematically with an emphasis on precision and accuracy.

- Most vocational educators question the reliability and validity of placement data.

- There is a wide range of sophistication among personnel and data processing equipment concerning placement data collection at the state and local levels.

- Quality of instruction, relevance of program, impact of program, and individual transition and growth represent four broad categories of possible criteria for which vocational education might be held accountable.

- The variables which affect the quality of job performance are many, making it difficult to discern the effects of even very good vocational education. However, by (1) measuring dimensions of performance which are important for a given job and (2) measuring those variables which affect performance--motivation, skills, and role concept--a useful and understandable evaluation can be performed.

- Intrinsic motivation, job involvement, and beliefs about work are attitudes deserving increased attention by evaluators in vocational education.

- The effects of vocational education on job satisfaction are very complex and difficult to determine. By using three models of satisfaction (Lawler's component model, job/person fit, and met expectations), the effects of vocational education on job satisfaction can be studied and possibly analyzed.

RECOMMENDATIONS

As a result of the findings of the project, the following recommendations are made.

- A continuing effort should be undertaken to ascertain the values expected of vocational education's various audiences and how vocational education could achieve appropriate linkage with these values.

- A major research effort should be planned and conducted to identify realistic criteria for which vocational education should be held accountable.

- Personnel development efforts should be initiated for preparing and updating vocational education personnel concerning the collection and use of placement data.